west virginia department of environmental protection

Division of Air Quality
601 57th Street SE
Charleston, WV 25304
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor
Randy C. Huffman, Cabinet Secretary
www.dep.wv.gov

ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Registration No.:	R13-2929A
Plant ID No.:	017-00035
Applicant:	Summit Midstream Partners, LLC
Facility Name:	Midpoint Compressor Station
Location:	New Milton, Doddridge County
NAICS Code:	211111
Application Type:	Modification
Received Date:	October 23, 2013
Engineer Assigned:	Roy F. Kees, P.E.
Fee Amount:	$2,000.00
Date Received:	October 29, 2013
Complete Date:	November 27, 2013
Due Date:	February 27, 2013
Applicant Ad Date:	October 29, 2013
Newspaper:	*The Herald Record*
UTM's:	Easting: 527.416 km Northing: 4339.327 km Zone: 17
Description:	Application to add a natural gas-fired generator to be used because commercial power is unavailable.

TYPE OF PROCESS

Taken from registration application R13-2929A:

On-site power generation is needed because commercial power is unavailable. The natural gas-fired generator engine will provide the necessary power for the facility.

SITE INSPECTION

A site inspection was performed by Jamie Jarrett of the enforcement section on May 22, 2012. The site was very isolated and some work had been performed on the land but there was no equipment present. Directions as given in the permit application are as follows:

From intersection of State Highway 18 and Co Route 25, head west/south on C/R 25 (3.3 miles). Turn right on Brushy Fork Road C/R 56 (0.6 miles). Turn right and follow to Midpoint Station (0.5 miles).

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled point source emissions for the Midpoint Compressor Station, provided by Summit and checked for accuracy by the writer, are summarized in the table below. Emissions from the new Caterpillar G3516LE natural gas-fired generator (GE-1) were calculated using engine & catalyst manufacturer data as well as AP-42 and fuel usage rate. The generator's emissions are based on 8,760 hours per year.

Source ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
GE-1	Caterpillar G3516LE Generator w/ Catalyst	Nitrogen Oxides	2.39	10.48
		Carbon Monoxide	2.99	13.10
		Volatile Organic Compounds	0.72	3.14
		Sulfur Dioxide	<0.01	0.02
		Particulate Matter – 10	0.08	0.36
		Formaldehyde	0.44	1.92
		Total HAP inc Formaldehyde	0.57	2.49
		CO_2e	1189	5207

REGULATORY APPLICABILITY

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to this source due to the fact that the proposed changes result in a net increase that exceeds the regulatory emission threshold for criteria pollutants of 6 lb/hr and 10 ton/year therefore requiring a Modification to the existing permit. Summit paid the $1000 application fee and $1000 NSPS fee. Summit also placed the required legal ad in *The Herald Record* on October 29, 2013 for which the affidavit of publication was received on November 27, 2013. The application was deemed complete on that date.

40CFR60 Subpart JJJJ (Standards of Performance for Stationary Spark Ignition Internal Combustion Engines)

40CFR60 Subpart JJJJ sets forth emission limits, fuel requirements, installation requirements, and monitoring requirements based on the year of installation of the subject internal combustion engine. 40CFR60 Subpart JJJJ is applicable to owners and operators of new stationary spark ignition internal combustion engines manufactured or overhauled after July 1, 2007 and with a maximum rated power capacity greater than 500 hp and fired by natural gas.

Based on the manufacturer's specifications for the 1,085 hp Caterpillar G3516LE engine, the emission standards will be met. Because the engine is not certified by the manufacturer, Summit will demonstrate compliance by conducting initial and subsequent performance testing as required by Subpart JJJJ. Summit will also be required to maintain a maintenance plan and associated records.

40CFR63 Subpart ZZZZ (National Emission Standards for Hazardous Air Pollutants for Source Categories from Stationary Reciprocating Internal Combustion Engines)

The facility will continue to be an area source of HAP. The natural gas-fired generator engine is a stationary RICE and commenced construction after the June 12, 2006 applicability date for new stationary RICE located at an area source. Therefore it is subject to this subpart and meets the requirements by meeting the requirements of 40CFR60 Subpart JJJJ.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The following information was obtained from USEPA's Air Toxic Website.

Hexane
Hexane is used to extract edible oils from seeds and vegetables, as a special-use solvent, and as a cleaning agent. Acute (short-term) inhalation exposure of humans to high levels of hexane causes mild central nervous system (CNS) effects, including dizziness, giddiness, slight nausea, and headache. Chronic (long-term) exposure to hexane in air is associated with polyneuropathy in humans, with numbness in the extremities, muscular weakness, blurred vision, headache, and fatigue observed. Neurotoxic effects have also been exhibited in rats. No information is available on the carcinogenic effects of hexane in humans or animals. EPA has classified hexane as a Group D, not classifiable as to human carcinogenicity.

Benzene
Benzene is found in the air from emissions from burning coal and oil, gasoline service stations, and motor vehicle exhaust. Acute (short-term) inhalation exposure of humans to benzene may cause drowsiness, dizziness, headaches, as well as eye, skin, and respiratory tract irritation, and, at high levels, unconsciousness. Chronic (long-term) inhalation exposure has caused various disorders in the blood, including reduced numbers of red blood cells and aplastic anemia, in occupational settings. Reproductive effects have been reported for women exposed by inhalation to high levels, and adverse effects on the developing fetus have been observed in animal tests. Increased incidence of leukemia (cancer of the tissues that form white blood cells) have been observed in humans occupationally exposed to benzene. EPA has classified benzene as a Group A, human carcinogen.

Ethylbenzene
Ethylbenzene is mainly used in the manufacture of styrene. Acute (short-term) exposure to ethylbenzene in humans results in respiratory effects, such as throat irritation and chest constriction, irritation of the eyes, and neurological effects such as dizziness. Chronic (long-term) exposure to ethylbenzene by inhalation in humans has shown conflicting results regarding its effects on the blood. Animal studies have reported effects on the blood, liver, and kidneys from chronic inhalation exposure to ethylbenzene. Limited information is available on the carcinogenic effects of ethylbenzene in humans. In a study by the National Toxicology Program (NTP), exposure to ethylbenzene by inhalation resulted in an increased incidence of kidney and testicular tumors in rats, and lung and liver tumors in mice. EPA has classified ethylbenzene as a Group D, not classifiable as to human carcinogenicity.

Toluene
Toluene is added to gasoline, used to produce benzene, and used as a solvent. Exposed to toluene may occur from breathing ambient or indoor air. The central nervous system (CNS) is the primary target organ for toluene toxicity in both humans and animals for acute (short-term) and chronic (long-term) exposures. CNS dysfunction and narcosis have been frequently observed in humans acutely exposed to toluene by inhalation; symptoms include fatigue, sleepiness, headaches, and nausea. CNS depression has been reported to occur in chronic abusers exposed to high levels of toluene. Chronic inhalation exposure of humans to toluene also causes irritation

of the upper respiratory tract and eyes, sore throat, dizziness, and headache. Human studies have reported developmental effects, such as CNS dysfunction, attention deficits, and minor craniofacial and limb anomalies, in the children of pregnant women exposed to toluene or mixed solvents by inhalation. Reproductive effects, including an association between exposure to toluene and an increased incidence of spontaneous abortions, have also been noted. However, these studies are not conclusive due to many confounding variables. EPA has classified toluene as a Group D, not classifiable as to human carcinogenicity.

Xylene
Commercial or mixed xylene usually contains about 40-65% m-xylene and up to 20% each of o-xylene and p-xylene and ethylbenzene. Xylenes are released into the atmosphere as fugitive emissions from industrial sources, from auto exhaust, and through volatilization from their use as solvents. Acute (short-term) inhalation exposure to mixed xylenes in humans results in irritation of the eyes, nose, and throat, gastrointestinal effects, eye irritation, and neurological effects. Chronic (long-term) inhalation exposure of humans to mixed xylenes results primarily in central nervous system (CNS) effects, such as headache, dizziness, fatigue, tremors, and incoordination; respiratory, cardiovascular, and kidney effects have also been reported. EPA has classified mixed xylenes as a Group D, not classifiable as to human carcinogenicity.

AIR QUALITY IMPACT ANALYSIS

Modeling was not required of this source since the facility is not subject to 45CSR14 (Permits for Construction and Major Modification of Major Stationary Sources of Air Pollutants) as seen in the table listed in the Regulatory Applicability Section.

MONITORING OF OPERATIONS

Summit will be required to perform the following monitoring:

1. Monitor and record quantity of natural gas consumed for the generator GE-1.

Summit will be required to perform the following recordkeeping:

1. Maintain records of the amount of natural gas consumed in generator GE-1.
2. Maintain records of testing conducted in accordance with the permit. Said records shall be maintained on-site or in a readily accessible off-site location
3. Maintain the corresponding records specified by the on-going monitoring requirements of and testing requirements of the permit.
4. Maintain a record of all potential to emit (PTE) HAP calculations for the entire facility. These records shall include the natural gas compressor engines and ancillary equipment.
5. The records shall be maintained on site or in a readily available off-site location maintained by Summit for a period of five (5) years.

RECOMMENDATION TO DIRECTOR

The information provided in the modification application indicates that Summit should meet all applicable requirements of any state rules and federal regulations. Therefore, it is recommended that the natural gas compressor station to be located near New Milton in Doddridge County be granted a 45CSR13 modification permit for their facility.

Roy F. Kees, P.E.
Engineer – NSR Permitting

Date